

Stigmodera (Themognatha) coronata, A New Jewel Beetle (Coleoptera: Buprestidae) From South-western Australia

BY MAGNUS PETERSON*

Abstract

Stigmodera (Themognatha) coronata sp. nov. is described from Yellowdine, Western Australia. Notes are provided on the habitat and adult food plant in the area. Relationships are discussed and species groups designated for *S. coronata* and some closely related taxa. Male genitalia of five species are illustrated.

Introduction

In late January 1979 Messrs M. Powell, M. Golding and T. M. S. Hanlon visited an area 34 km E of Southern Cross, in the immediate vicinity of Yellowdine, Western Australia (31°18'S, 119°39'E), to observe buprestid beetles for distributional data.

The dominant vegetation in the area consists of cream flowered mallees (*Eucalyptus redunca* Schau.) with an understorey of porcupine grass (*Triodia scariosa* Burbidge), growing in a pink-white clay soil.

Adults of 26 buprestid species were recorded on *E. redunca* flowers, from 1600-1930 hrs on the 27 Jan. 1979 and from 0645-1000 hrs and 1545-1830 hrs on the 28 Jan. 1979 (Western Standard Time). A small sample of each taxon was retained for identification and reference purposes; the remainder were released in situ.

Six specimens of an undescribed species were amongst material retained. For these and 3 other specimens, the following nomenclature is proposed:

Stigmodera (Themognatha) coronata sp. nov. (Figs 1-6A, 11)

Types

Holotype: ♂, Yellowdine, W. Aust., on *Eucalyptus redunca*, 28.i.1979, M. Powell, Western Australian Museum collection, 79/1617.

Allotype: ♀, Yellowdine, W. Aust., on *Eucalyptus redunca*, 28.i.1979, M. Golding, WAM 79/1618.

Paratypes: 3 ♂ & 1 ♀, Yellowdine, W. Aust., on *Eucalyptus redunca*, 28.i.1979, T. M. S. Hanlon (Collection T. M. S. Hanlon).

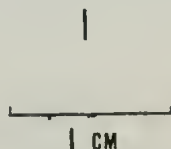
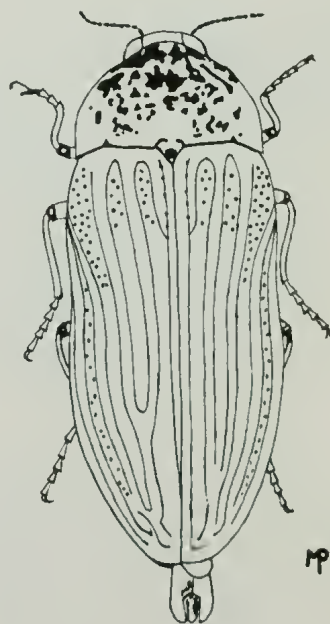


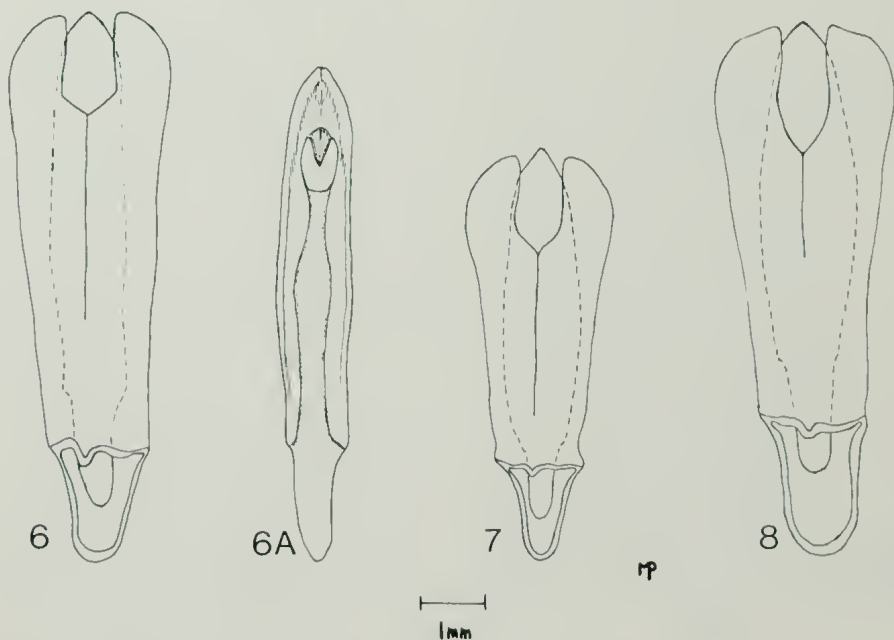
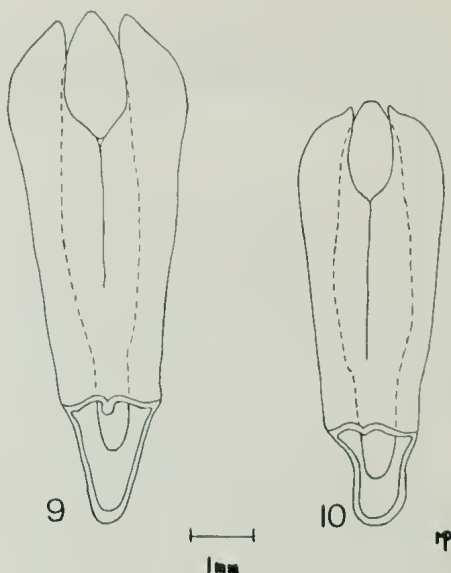
Fig. 1. Dorsal view of male *S. coronata*.

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Fig. 5. Hind leg of *S. coronata*.

Figs 6-10. Outline diagram of male genitalia (dorsal view) of the following *Stigmodera* (*Themognatha*) species (Dotted line represents hidden outline of penis): 6 — *coronata*; 6A — *coronata* penis (ventral view); 7 — *conspicillata*; 8 — *gloriosa*; 9 — *spencei*; 10 — *duboulayi*.



same width as prothorax at base, sinuate pre-medially, then gradually rounded to each apex. *Elytral disc* punctate-striate; intervals mainly flat, becoming slightly rounded towards apex, and convex laterally; all intervals impunctate except for the following: the second and fourth intervals punctate at base; the sixth interval expanded at base, finely and

closely punctate for basal third; the eighth interval with a single row of punctures for its entire length; first striae bifurcate at basal extremity; basal margin flat (not costate). *Humeral epipleuron* (Fig. 4) moderately expanded and inflexed. *Elytral apices* rounded. *Undersurface* with extremely close, fine and shallow punctures and a few, fine, short hairs



Figs. 11-15. Outline diagram of male genitalia (ventral view) of the following *Stigmodera* (*Themognatha*) species:

11 — *coronata*; 12 — *conspicillata*; 13 — *gloriosa*; 14 — *spencei*; 15 — *duboulayi*.

on the prosternum and metasternum. *Legs* (Fig. 5) with extremely close, fine and shallow punctures and a few, fine, short hairs at the base (proximal extremity) of the femora. First tarsal segment of hind leg not elongate, same length as remainder. *Tarsal claws* (Fig. 3) strongly lobed at base. *Apical sternite* arcuately excised (concave). *Aedeagus* (Fig. 6, 6A) elongate; inner margin of parameres angulate in dorsal view; penis slender and attenuate.

Females

Females differ in the following characters: larger size, less hirsute, apical sternite rounded (convex), larger and more strongly defined bifurcate marking on prosternum and less punctate clytral intervals.

Measurements

Males $31.65 \pm 2.95 \times 12.75 \pm 0.75$ mm (6).

Females $36.7 \pm 2.5 \times 15.35 \pm 0.65$ mm (3).

Distribution

Only known from two localities near Yellowdine, Western Australia.

Etymology

The specific epithet *coronata* alludes to the 'crown' of iridescent flecks on the pronotum, which contrast strongly with the uniform, matt colour of the remaining dorsal surface.

Discussion

The subgenus *Themognatha* Solier, last revised by Carter (1916, 1929,

1931a, b), was recently redefined by Barker (1979) on the following characters:

A. Elytra striate or punctate-striate, sometimes with costae.

B. Tarsal claws usually lobed and toothed at base (Fig. 3).

C. Hair on dorsal surface of head.

D. Scutellum oval or round.

E. Medium to large size.

On the basis of these characters, *S. coronata* is a member of this subgenus.

Within *Themognatha*, a number of discrete species assemblages can be recognized. *S. spencei* L. & G., *S. conspicillata* White, *S. duboulayi* Saunders, *S. macfarlanei* Waterhouse and *S. gloriosa* Carter are here grouped on the basis of the following characters:

A. Three elytral fasciae (including apical) in females (*S. spencei* mostly has three, occasionally two, fasciae in both sexes).

B. Sexual dichromatism, with reduced number of elytral fasciae in males of most taxa.

C. Morphology of male genitalia (Fig. 7-10, 12-15): shape of penis and outline of parameres.

They are considered to form the *S. spencei* species group. *S. coronata* is most similar to this group, in body

shape in transverse section and outline of male genitalia (Fig. 6, 11), but may be differentiated on the following suite of characters:

A. Absence of elytral pattern.

B. Absence of sexual dichromatism.

C. Angulate inner margin of parameres in dorsal view (Fig. 6).

D. Attenuate slender penis (Fig. 6, 6A).

E. Pronotal iridescence reduced to a series of flecks (Fig. 1).

For these reasons I consider *S. coronata* to constitute a monotypic species group, most closely related to the *S. spencei* species group. The *S. coronata* species group differs from all other *Themognatha* taxa, in possessing characters C and D.

S. conspicillata and *S. gloriosa*, of *S. spencei* species group members, are the most closely related to *S. coronata* on the basis of the following characters:

A. Nature of reduction of pronotal iridescence.

B. Rounded elytral apices.

C. Non-explanate pronotal margins.

D. Moderately expanded and inflexed humeral epipleuron.

I consider *S. coronata* is closest to, and possibly derived from, *S. gloriosa* because of similarities in ground colour, pronotal shape, and length and proportions of male genitalia.

In the field, *S. coronata* may be confused with four sympatric *Themognatha* taxa which are superficially similar but not closely related. These are *S. chevrolati* Gehin, *S. brucki* Thomson, *S. lessoni* L. & G. and *S. yarrelli flavipennis* Gehin. They differ as follows: *S. chevrolati* has explanate pronotal margins, bispinose elytral apices, blue elytral suture, margins and fasciae, slender elongate body and narrowly expanded humeral epipleuron; *S. brucki* has explanate pronotal margins, wide flat green pronotum with cream lateral margins, no prosternal bifurcate marking and narrowly expanded humeral epipleuron; *S. lessoni* has a green pro-

notum with cream lateral margins, slightly bidentate elytral apices and green elytral suture and margins; *S. yarrelli flavipennis* exhibits sexual dichromatism (elytral fasciae present in females, absent in males), blue pronotum with cream lateral margins and narrowly expanded humeral epipleuron. All these taxa differ markedly from *S. coronata* in male genitalic structure.

The colour pattern of *S. coronata* is possibly an adaptation for procrypsis on the cream flowered mallees, with the iridescent pronotal flecks approximating the sunlight reflecting on the nectar in the hypanthium and the cream ground colour blending in with the cream stamens of the mallee flowers. This is an unusual occurrence in *Themognatha* with most species being obvious even to the casual observer.

Acknowledgements

I would like to thank Mr T. J. Hawkeswood, Department of Botany, James Cook University, Townsville, Qld. and Mr D. Knowles (Perth, W.A.) for providing constructive comments on the manuscript, Messrs M. Powell and M. Golding for providing specimens, field data and other information given in this paper. The following kindly provided access to collections in their care: Dr E. Matthews, South Australian Museum, Adelaide; Dr J. Lawrence, Division of Entomology, C.S.I.R.O., Canberra; Dr G. Monteith and Mr E. C. Dahms, Queensland Museum, Brisbane; Mr M. de Baar, Queensland Forestry Dept., Brisbane; Ms M. Schneider, Queensland University, Brisbane; Queensland Dept. of Primary Industry, Indooroopilly, Brisbane; Dr A. A. Calder and Dr A. Neboiss, National Museum of Victoria, Melbourne; Dr T. F. Houston, Western Australian Museum, Perth; Dr C. N. Smithers and Mr G. Holloway, Australian Museum, Sydney; Mr A. Sundholm, Sydney; Mr T. M. S. Hanlon, Perth. I am grateful to Dr A. E. Greer (Australian Museum) for the use of equipment and Mr D. Metcalfe, Ms M. Brady and Mr P. de Boer for typing the manuscript.

REFERENCES

- Barker, S., 1979. New species and a catalogue of *Stigmodera* (*Castiarina*) (Coleoptera: Buprestidae). *Trans. R. Soc. S. Aust.* 103: 1-23.
Carter, H. J., 1916. Revision of the genus *Stigmodera*, and descriptions of some new species of Buprestidae (Order Coleoptera). *Trans. R. Soc. S. Aust.* 40: 78-144, plates IX & X.

Carter, H. J., 1929. A check list of the Australian Buprestidae. *Aust. Zool.* 5: 265-304.

Carter, H. J., 1931a. Checklist of the Australian Buprestidae. *Corrigenda. Aust. Zool.* 6: 107

Carter, H. J., 1931b. Notes on the genus *Stigmodera* (family Buprestidae), (together with descriptions of new species of and a retabulation of the subgenus *Castiarina*). *Aust. Zool.* 6: 337-367.

Tertiary Planktonic Foraminifera from Muddy Creek, Victoria

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In this paper we present data on the planktonic foraminiferal fauna of the Muddy Creek Marl from Clifton Bank, Muddy Ck., Hamilton, Vict.

The foraminiferal fauna was first described by Howchin (1889). Since then further notes have been made by Chapman (1923) and Parr (1926). More recently, in an unpublished thesis, Mallett (1977) made a brief comment on the fauna listing eight species of planktonic foraminifera.

The samples studied here came from the Clifton Bank where the exposure was closely sampled (Fig. 1). The collecting party considered that the samples came from Prof. Ralph Tate's original collection site (A. R. Hutchinson *in litt* to R. Burn, 17 Aug. 1968). Of the samples, only three (9, 7b, and 5) had not been previously washed and so were suitable for foraminiferal determinations. From these a more detailed planktonic fauna was obtained than had previously been found. Each sample available was halved and independently prepared, with the faunas identified and cross-checked to overcome any bias in techniques.

Fauna and Age

A total of 20 species of planktonic forams was found (Table 1). Species marked * were rare occurring as less than 2% of the fauna (based on a count

of at least 300 planktonic forams in each sample.)

Samples 9 and 7b were dominated by *Globigerinoides sicanus* (25% and 17% respectively) with *Globigerina woodi woodi* also dominant (19% and 11%). The other main species each constitute from 6-10% of the faunas.

Over the past decade or so there has been a great advance in the worldwide zonation of the Tertiary based upon the planktonic forams (e.g. see Berggren and Van Couvering, 1974). Fig. 2 shows that part of the zonation scheme which concerns us here, using ages adapted from Chaproniere (1980).

The presence, in sample 9, of both *G. sicanus* and *Pracorbulina glomerosa* indicates an N8 age for this sample. With the entry of *Orbulina suturalis* in sample 7b, both this and sample 5 belong to zone N9. *P. glomerosa* extends just into the base of zone N9 (Stainforth et al 1975).

The planktonic forams also enable us to make an estimate of the depth of deposition of the sediments at Clifton Bank. It is well known that the planktonic percentage of the total foram fauna increases with increasing depth of deposition. In the present samples the planktonic percentages range from 20% (sample 9) to 11% (7b) and 9% (5). These figures indicate a depth of deposition of about 60 metre for sample 9 with a shallowing to 40 metre or less for the other two samples. The benthonic forams indicate a similar depth range and will be discussed in a further note.

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